State of Hawaii
DEPARTMENT OF LAND AND NATURAL RESOURCES
Division of Aquatic Resources
Honolulu, Hawaii 96813

July 8, 2011

Board of Land
and Natural Resources
Honolulu, Hawaii

Request for Authorization and Approval to Issue a Papahānaumokuākea Marine National Monument Research Permit to Dr. Florence Thomas, University of Hawaii, Hawaii Institute of Marine Biology, for Access to State Waters to Conduct Nutrient Productivity Research Activities

The Division of Aquatic Resources (DAR) hereby submits a request for your authorization and approval for issuance of a Papahānaumokuākea Marine National Monument research permit to Dr. Florence Thomas, associate researcher, Hawaii Institute of Marine Biology, pursuant to § 187A-6, Hawaii Revised Statutes (HRS), chapter13-60.5, Hawaii Administrative Rules (HAR), and all other applicable laws and regulations.

The research permit, as described below, would allow entry and activities to occur in Papahānaumokuākea Marine National Monument (Monument), including the NWHI State Marine Refuge and the waters (0-3 nautical miles) surrounding the following sites:

- Nihoa Island
- Necker Island
- French Frigate Shoals
- Gardner Pinnacles
- Maro Reef
- Laysan Island
- Lisianski Island
- Pearl and Hermes Atoll
- Kure Atoll

The activities covered under this permit would occur between July 15, 2011 and November 30, 2011.

INTENDED ACTIVITIES

The Applicant proposes to collect samples of water, common reef algae, and small bivalve species by hand in the water either snorkeling or with the use of SCUBA. The purpose of these collections is to determine the relative role of terrestrial sources (primarily resulting from seabirds) of nutrients to primary productivity along the archipelago. Historically seabirds were much more common within the Northwest Hawaiian Islands and deposited large quantities of guano. In the late 1800s and early 1900s there was considerable pressure on bird populations and extensive guano mining especially on Laysan Island. The Applicant wishes to examine if the loss

of this terrestrial input of nutrients from bird sources has altered productivity in the Northwest Hawaiian Islands and resulted in some of the shifts in productivity still seen today.

As such, the applicant proposes to collect isotope signatures along the NWHI archipelago and to apply a relatively new technique, microbial source tracking (MST), to identify sources of microbes found in bivalves samples. Recently MST has been used to track fecal contamination of humans, sheep, and cows up to 6 km off shore and these indicators were associated with know terrestrial sources of nutrients. The applicant proposes to use a similar technique focused on bird guano to track sources of nutrient inputs in near shore environments along the NWHI.

The research project would involve the following collections:

1. Up to 30 tissue samples (< 1 gm dry weight) of three algal (limu) species (*Neomaris annulata, Turbinaria ornate, Sargassum polyphyllum*) per island

2. Up to 4 liters of sea water per island

3. Up to 20 bivalves of each species (Venticose ark shell and Spiny oyster) per island

The activities proposed by the Applicant directly support the Monument Management Plan's priority management needs 3.1 – Understanding and Interpreting the NWHI (through action plan 3.1.1 – Marine Conservation Science).

The activities described above may require the following regulated activities to occur in State waters:

☒ Removing, moving, taking, harvesting, possessing, injuring, disturbing, or damaging any living or nonliving monument resource

☒ Swimming, snorkeling, or closed or open circuit SCUBA diving within any Special Preservation Area or Midway Atoll Special Management Area

REVIEW PROCESS:

The permit application was sent out for review and comment to the following scientific and cultural entities: Hawaii Division of Aquatic Resources, Hawaii Division of Forestry and Wildlife, Papahānaumokuākea Marine National Monument (NOAA/NOS), NOAA Pacific Islands Regional Office (NOAA-PIRO), United States Fish and Wildlife Service Hawaiian and Pacific Islands National Wildlife Refuge Complex Office, and the Office of Hawaiian Affairs (OHA). In addition, the permit application has been posted on the Monument Web site since April 7th, giving the public an opportunity to comment. The application was posted within 40 days of its receipt, in accordance with the Monument's Public Notification Policy.

Comments received from the scientific community are summarized as follows:

Scientific reviews support the acceptance of this application. The following questions were raised and addressed by the Applicant.

1. *What kind of preparation is the applicant planning to do, given that running perpendicular transects from shore seaward for up to 1,000 meters is impossible for many areas of the Monument, due to steep cliffs and surf?*

The Applicant states that she is *not* proposing to lay transect lines but rather swim a course seaward from shore along a compass direction to a max of 1000 yards off shore. These transects would start in the shallow subtidal near shore (distance from shore based on safety and any local considerations) and extend seaward so that the max depth is 60 ft and the max length 1000 meters. This would result in transects of different lengths on different islands but is necessary so that she limit maximum depth for dive safety and so that she is comparing habitats of similar depths in all locations.

2. *Please confirm that all work will be conducted below the high tide mark.*

The Applicant confirms that all work would be done below the high tide mark.

Comments received from the Native Hawaiian community are summarized as follows:

Cultural reviews support the acceptance of this application.

Comments received from the public are summarized as follows:

No comments were received from the public on this application.

Additional reviews and permit history:

Are there other relevant/necessary permits or environmental reviews that have or will be issued with regard to this project? (e.g. MMPA, ESA, EA) Yes ☒ No ☐
If so, please list or explain:

- The proposed activities are in compliance with the National Environmental Policy Act.
- A Section 7 ESA consultaion has been initiated and is in process.
- The Department has made an exemption determination for this permit in accordance chapter 343, HRS, and Chapter 11-200, HAR. See Attachment ("DECLARATION OF EXEMPTION FROM THE PREPARATION OF AN ENVIRONMENTAL ASSESSMENT UNDER THE AUTHORITY OF CHAPTER 343, HRS AND CHAPTER 11-200 HAR, FOR PAPAHĀNAUMOKUĀKEA MARINE NATIONAL MONUMENT RESEARCH PERMIT TO DR. FLORENCE THOMAS, HAWAII INSTITUTE OF MARINE BIOLOGY, FOR ACCESS TO STATE WATERS TO CONDUCT NUTRIENT PRODUCTIVITY RESEARCH ACTIVITIES UNDER PERMIT PMNM-2011-027")

Has Applicant been granted a permit from the State in the past? Yes ☐ No ☒
If so, please summarize past permits:

Have there been any a) violations: Yes ☐ No ☒
b) Late/incomplete post-activity reports: Yes ☐ No ☒

Are there any other relevant concerns from previous permits? Yes ☐ No ☒

STAFF OPINION

DAR staff is of the opinion that Applicant has properly demonstrated valid justifications for her application and should be allowed to enter the NWHI State waters and to conduct the activities therein as specified in the application with certain special instructions and conditions, which are in addition to the Papahānaumokuākea Marine National Monument Research Permit General Conditions. All suggested special conditions have been vetted through the legal counsel of the Co-Trustee agencies (see Recommendation section).

MONUMENT MANAGEMENT BOARD OPINION

The MMB is of the opinion that the Applicant has met the findings of Presidential Proclamation 8031 and this activity may be conducted subject to completion of all compliance requirements. The MMB concurs with the special conditions recommended by DAR staff.

RECOMMENDATION

Based on the attached proposed declaration of exemption prepared by the department after consultation with and advice of those having jurisdiction and expertise for the proposed permit actions:

1. That the Board declare that the actions which are anticipated to be undertaken under this permit will have little or no significant effect on the environment and is therefore exempt from the preparation of an environmental assessment.

2. Upon the finding and adoption of the department's analysis by the Board, that the Board delegate and authorize the Chairperson to sign the declaration of exemption for purposes of recordkeeping requirements of chapter 343, HRS, and chapter 11-200, HAR.

3. That the Board authorize and approve a Research Permit to Dr. Florence Thomas, Hawaii Institute of Marine Biology, with the following special conditions:

a. This permit is not to be used for nor does it authorize the sale of collected organisms. Under this permit, the authorized activities must be for noncommercial purposes not involving the use or sale of any organism, by-products, or materials collected within the Monument for obtaining patent or intellectual property rights.

b. The permittee may not convey, transfer, or distribute, in any fashion (including, but not limited to, selling, trading, giving, or loaning) any coral, live rock, or organism collected under this permit without the express written permission of the Co-Trustees.

c. To prevent introduction of disease or the unintended transport of live organisms, the permittee must comply with the disease and transport protocol attached to this permit.

d. Tenders and small vessels must be equipped with engines that meet EPA emissions requirements.

e. Refueling of tenders and all small vessels must be done at the support ships and outside the confines of lagoons or near-shore waters in the State Marine Refuge.

f. No fishing is allowed in State Waters except as authorized under State law for subsistence, traditional and customary practices by Native Hawaiians.

Respectfully submitted,

FMR Administrator

APPROVED FOR SUBMITTAL

William J. Aila, Jr.
Chairperson

Papahānaumokuākea Marine National Monument
RESEARCH Permit Application

NOTE: ***This Permit Application (and associated Instructions) are to propose activities to be conducted in the Papahānaumokuākea Marine National Monument. The Co-Trustees are required to determine that issuing the requested permit is compatible with the findings of Presidential Proclamation 8031. Within this Application, provide all information that you believe will assist the Co-Trustees in determining how your proposed activities are compatible with the conservation and management of the natural, historic, and cultural resources of the Papahānaumokuākea Marine National Monument (Monument).***

ADDITIONAL IMPORTANT INFORMATION:

- Any or all of the information within this application may be posted to the Monument website informing the public on projects proposed to occur in the Monument.

- In addition to the permit application, the Applicant must either download the Monument Compliance Information Sheet from the Monument website OR request a hard copy from the Monument Permit Coordinator (contact information below). The Monument Compliance Information Sheet must be submitted to the Monument Permit Coordinator after initial application consultation.

- Issuance of a Monument permit is dependent upon the completion and review of the application and Compliance Information Sheet.

INCOMPLETE APPLICATIONS WILL NOT BE CONSIDERED
Send Permit Applications to:
Papahānaumokuākea Marine National Monument Permit Coordinator
6600 Kalaniana'ole Hwy. # 300
Honolulu, HI 96825
nwhipermit@noaa.gov
PHONE: (808) 397-2660 FAX: (808) 397-2662

SUBMITTAL VIA ELECTRONIC MAIL IS PREFERRED BUT NOT REQUIRED. FOR ADDITIONAL SUBMITTAL INSTRUCTIONS, SEE THE LAST PAGE.

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Papahānaumokuākea Marine National Monument
Permit Application Cover Sheet

This Permit Application Cover Sheet is intended to provide summary information and status to the public on permit applications for activities proposed to be conducted in the Papahānaumokuākea Marine National Monument. While a permit application has been received, it has not been fully reviewed nor approved by the Monument Management Board to date. The Monument permit process also ensures that all environmental reviews are conducted prior to the issuance of a Monument permit.

Summary Information
Applicant Name: Florence I Thomas
Affiliation: Hawaii Institute of Marine Biology, University of Hawaii at Manoa

Permit Category: Research
Proposed Activity Dates: 05/01/11 through 11/15/11
Proposed Method of Entry (Vessel/Plane): R/V Hi'ialakai
Proposed Locations: Shallow water habitats (< 100 feet depth), focused on collecting algae and bivalves for isotope studies. To identify sources of nutrients along the archipelago. Collections can be made on any islands with some emphasis given to those known presently and or historically to house bird colonies.

Estimated number of individuals (including Applicant) to be covered under this permit: One (1) berthing position for my research team, plus available members of researchers from other permitted activities who can collect opportunistically on our behalf. The person taking this berth (Oscar Guayadol i Roig) will also work with Donahue's team. Other individuals agree to work with us are Nyssa Silbiger, and Megan Donahue.
Estimated number of days in the Monument: Up to approximately 30 days

Description of proposed activities: (complete these sentences):
a.) The proposed activity would…
collect samples of common reef algae and small bivalve species. The purpose of these collections is to determine the relative role of terrestrial sources (primarily resulting from seabirds) of nutrients to primary productivity along the archipelago. Historically seabirds were much more common within the Northwest Hawaiian Island's and deposited large quantities of guano. In the late 1800's and early 1900's there was considerable pressure on bird populations and extensive guano mining especially on Laysan Island. Did the loss of this terrestrial input of nutrients from bird sources alter productivity in the Northwest Hawaiian Island's and result in some of the shifts in productivity still seen today? To begin to address this question we propose to collect isotope signatures along the NWHI archipelago and to apply a relatively new technique microbial source tracking (MST; e.g. Stoekel et al 2007) to identify sources of microbes found in bivalves samples. Isotope signatures are often used as indicators of terrestrial based nutrients however sources are harder to identify. Fecal indicator bacteria such as Escherichia coli (E. coli) and enterococci are associated with all warm-blooded animals and can persist for days to

weeks in the environment (Anderson et al. 2005; Badgley et al. 2010; Ferguson et al. 2005; de Oliveira et al. 2008). Recently MST has been used to track fecal contamination of humans, sheep, and cows up to 6 km off shore and these indicators were associated with know terrestrial sources of nutrients (Cornelisen et al. In press). We will use a similar technique focused on bird guano to track sources of nutrient inputs in near shore environments along the NWHI.

b.) To accomplish this activity we would ....
collect target algal samples by hand. Isotope studies require a very small amount of tissue. Samples will be collected and dried on board and isotope analysis conducted on dried samples at the University of Hawaii. Bivalve samples are collected and the digestive glands removed and processed for MST analysis. To conduct MST bacterial counts are conducted using a standard fermentation technique (Cornelsen et al in press). DNA is then extracted for analysis at HIMB using markers developed for Hawaiian sea bird species.

c.) This activity would help the Monument by ...
It has been well documented that marine derived nutrients subsidize terrestrial island food webs (e.g. through deposition of algae on beaches or through seabird/seal droppings). The contribution of allochthonous nutrient inputs to island food webs has been explored extensively; however, there has been little research into the extent to which nutrients derived from the open ocean that are deposited in concentrated quantities on remote islands are returned to the marine environment and support primary production in intertidal and nearshore waters. In the NWHI, there are large seabird populations that nest on small/steep islands that are immediately surrounded by productive macroalgal and reef habitats. Seabirds feed on fish over extensive open ocean areas and return to the islands and deposit large quantities of guano that are high in nutrients such as nitrogen; hence, the seabirds likely nourish the island ecosystem as well as nearshore communities. Loss of seabirds and mining of guano may be responsible for shits in community structure and may be underestimated. Knowing the role of seabirds would help management by identifying a major nutrient vector and help to understand what underlies differences in primary productivity among islands and through time. Knowing the base of variation in primary productivity is essential to management of marine systems and understanding the linkage between the ocean and terrestrial systems will provide a basis for shared management strategies.

Other information or background: There is mounting evidence that marine systems can subsidize terrestrial environments and newer less abundant evidence that the reverse is also true. Thus there is an important connection between oceanic, terrestrial, and nearshore productivity with multiple connections driven by major linking species. Breaks or alterations in these links may have severe impacts on all three ecosystems. Seabirds feed offshore then return to islands and release nutrients derived from the oceanic system. Guano from these birds can then enter nearshore systems where they may affect local productivity. Thus seabirds have the potential to be a very important link in the connection between oceanic systems and productivity of island

systems. Recent developments in isotopes analysis allow us to examine food webs in greater detail than previously possible and molecular tracers allow us to trace species specific microbes along with nutrient exchange among systems. Here we propose to link isotope studies with MST to examine the importance and extent of seabird fertilization of nearshore systems.

Section A - Applicant Information

1. Applicant

Name (last, first, middle initial): Florence I Thomas

Title: Associate Researcher, Hawaii Institute of Marine Biology

1a. Intended field Principal Investigator (See instructions for more information):
Oscar Guayadol i Roig

2. Mailing address (street/P.O. box, city, state, country, zip):
Hawaii Institute of Marine Biology
46-007 Lilipuna Road, Kaneohe, HI 96744

Phone: 808-236-7418

Fax: 808-236-7443

Email: fithomas@hawaii.edu

For students, major professor's name, telephone and email address:
Florence I Thomas, HIMB
808-236-7418

3. Affiliation (institution/agency/organization directly related to the proposed project):
Hawaii Institute of Marine Biology,
School of Ocean & Earth Science & Technology,
University of Hawaii at Manoa.

4. Additional persons to be covered by permit. List all personnel roles and names (if known at time of application) here (e.g. John Doe, Research Diver; Jane Doe, Field Technician):
Our specific research team is expected to include only one participant on the cruise (Oscar Guayadol i Roig), we request permission for other permitted participants to be included as potential collection assistants on this project to provide maximum flexibility in the field depending on weather conditions and site. Our primary participants will be Megan Donahue,

Oscar Guayadol i Roig, Nyssa Silbiger. We ask that researchers on other projects (Brian Bowen and other RA's (TBA)) on the cruise be able to assist with the collection when not otherwise occupied with their own work.

Section B: Project Information

5a. Project location(s):

		Ocean Based	
☒ Nihoa Island	☐ Land-based	☒ Shallow water	☐ Deep water
☒ Necker Island (Mokumanamana)	☐ Land-based	☒ Shallow water	☐ Deep water
☒ French Frigate Shoals	☐ Land-based	☒ Shallow water	☐ Deep water
☒ Gardner Pinnacles	☐ Land-based	☒ Shallow water	☐ Deep water
☒ Maro Reef			
☒ Laysan Island	☐ Land-based	☒ Shallow water	☐ Deep water
☒ Lisianski Island, Neva Shoal	☐ Land-based	☒ Shallow water	☐ Deep water
☒ Pearl and Hermes Atoll	☐ Land-based	☒ Shallow water	☐ Deep water
☒ Midway Atoll	☐ Land-based	☒ Shallow water	☐ Deep water
☒ Kure Atoll	☐ Land-based	☒ Shallow water	☐ Deep water
☐ Other			

NOTE: There is a fee schedule for people visiting Midway Atoll National Wildlife Refuge via vessel and aircraft.

Location Description:
As outlined above, we anticipate our collection efforts will be conducted only in the shallow water reef habitats between Nihoa and Kure to determine the effects of terrestrial sources of nutrients to the shallow coastal system. Other priorities dictate that cruises will visit a variety of atoll all of which provide needed information. I therefore list all possible sites here for maximum flexibility due to weather or unforeseen changes to cruise schedules. All activities will occur within the area outlined by the following coordinates.

Location:	Longitude	Latitude
Kure Atoll	-178.19706492000	28.55825235580
Kure Atoll	-178.19623585400	28.29958375730
Kure Atoll	-178.45987884800	28.29958375730
Kure Atoll	-178.46070791400	28.55742328970
Midway Atoll	-177.19638223300	28.37419969920
Midway Atoll	-177.19721129900	28.13377055310
Midway Atoll	-177.52800864100	28.13459961920
Midway Atoll	-177.52800864100	28.37419969920
Pearl and Hermes Atoll	-176.08850981800	28.04643025580
Pearl and Hermes Atoll	-175.63289162600	28.04539944540
Pearl and Hermes Atoll	-175.63289162600	27.70729363750
Pearl and Hermes Atoll	-176.08954062900	27.70626282710
Lisianski Island	-173.67292570900	26.25150771120
Lisianski Island	-173.67292570900	25.83942708400
Lisianski Island	-174.23095155800	25.83942708400
Lisianski Island	-174.23095155800	26.25150771120
Laysan Island	-171.47900122300	25.96027179830

Laysan Island	-171.47725234300	25.65596666490
Laysan Island	-171.97918092500	25.65771554490
Laysan Island	-171.97918092500	25.96202067840
Maro Reef	-170.18133220600	25.69968866680
Maro Reef	-170.17958332600	25.21524888540
Maro Reef	-171.00505472200	25.21524888540
Maro Reef	-171.00505472200	25.69968866680
Gardner Pinnacles	-167.74832319300	25.26070709440
Gardner Pinnacles	-167.75087047400	24.34878019150
Gardner Pinnacles	-168.36221811900	24.35132747340
Gardner Pinnacles	-168.36476540100	25.26070709440
French Frigate Shoals	-165.93465851400	23.94630965900
French Frigate Shoals	-165.93465851400	23.56421738120
French Frigate Shoals	-166.45685129400	23.56421738120
French Frigate Shoals	-166.45685129400	23.94630965900
Necker Island	-164.13627752700	23.71705429230
Necker Island	-164.13373024500	23.20505064020
Necker Island	-164.92084033700	23.20505064020
Necker Island	-164.92338761900	23.71960157420
Nihoa Island	-161.66031956700	23.23816530420
Nihoa Island	-161.66286684900	22.94013332760
Nihoa Island	-162.05005369100	22.94268060940
Nihoa Island	-162.05260097200	23.23561802240

5b. Check all applicable regulated activities proposed to be conducted in the Monument:

☒ Removing, moving, taking, harvesting, possessing, injuring, disturbing, or damaging any living or nonliving Monument resource

☐ Drilling into, dredging, or otherwise altering the submerged lands other than by anchoring a vessel; or constructing, placing, or abandoning any structure, material, or other matter on the submerged lands

☐ Anchoring a vessel

☐ Deserting a vessel aground, at anchor, or adrift

☐ Discharging or depositing any material or matter into the Monument

☐ Touching coral, living or dead

☐ Possessing fishing gear except when stowed and not available for immediate use during passage without interruption through the Monument

☐ Attracting any living Monument resource

☐ Sustenance fishing (Federal waters only, outside of Special Preservation Areas, Ecological Reserves and Special Management Areas)

☐ Subsistence fishing (State waters only)

☒ Swimming, snorkeling, or closed or open circuit SCUBA diving within any Special Preservation Area or Midway Atoll Special Management Area

6 Purpose/Need/Scope ***State purpose of proposed activities:***

The link between terrestrial sources of seabird guano and offshore ecosystem productivity is not well established. It is possible that the loss of seabirds and historical mining of guano on some islands has shifted ecosystem function through changes in nutrient transfer from oceanic systems to nearshore systems. Isotope studies can reveal the link between terrestrial and nearshore systems and the use of microbial source tracking can identify the nutrient sources as derived from seabirds. Collecting algal samples for isotope analysis will provide samples for primary producers. We will collect 30 tissue samples (each less than 1 gram dry weight) of the following species Neomaris annulata, , Turbinaria ornata, Sargassum polyphyllum at each collection island. MST studies will be conducted by collecting Arca ventricosa (the venticose ark shell) and Spondylus nicobaricus (the spiny oyster) along terrestrial to sea transects. At each island we will collect 15 or fewer samples.

7. Answer the Findings below by providing information that you believe will assist the Co-Trustees in determining how your proposed activities are compatible with the conservation and management of the natural, historic, and cultural resources of the Monument:

The Findings are as follows:

a. How can the activity be conducted with adequate safeguards for the cultural, natural and historic resources and ecological integrity of the Monument?
My team and I work closely with two community based groups on Oahu that are interested in restoring taro fields to sustainable taro production and the He'eia fishpond to a functioning fish pond for education and sustainable fish production. Through our work with these groups we have developed strong ties to social scientists working with these groups as well as some of the kapuna involved as leaders of the groups. We strive to work within the context of the groups who have the restoration vision and focus our research topics on those deemed important to the community.
In our work in Papahānaumokuākea we will not disturb any archeological sites on land or in the sea. Each participant will be required to participate in a Cultural Briefing prior to departure on the Hi'ialakai. Further each member of my team will be asked to reflect on the importance of the site they are being given the privilege to enter and will be asked to develop their own offering and spiritual reflection on the importance of Papahānaumokuākea. In respect for the importance of ritual we will gather on the ship deck for each person to offer his or her own vision for reflection.

b. How will the activity be conducted in a manner compatible with the management direction of this proclamation, considering the extent to which the conduct of the activity may diminish or enhance Monument cultural, natural and historic resources, qualities, and ecological integrity, any indirect, secondary, or cumulative effects of the activity, and the duration of such effects?

This type of research is directly mandated by the Proclamation, and is necessary to both maintain ecosystem integrity and provide for adaptive ecosystem management in the face of natural or anthropogenic disasters and global climate change. There is evidence that the ecosystem in the northwest Hawaiian Islands has changed over time. This change could be caused by shifts in top down (changes in predator numbers) and/or bottom up (nutrient sources and use). Further changes may be expected due to processes associated with global climate change.

Changes in the ecosystem have been examined in terms of top down shifts however little attention has been given to the role terrestrial nutrient sources (sea bird guano) may play in the bottom up control of the ecosystem. Sea birds feed at sea bring back nutrients that are deposited on shore. These nutrients are then washed into the coastal environment in pulsed high concentrations during storm events. What role do these localized subsidies of coastal productivity have on higher levels of the food chain? How much of these nutrients are incorporated into costal primary producers? If this source of nutrients proves to be important it points to an under appreciated role that loss of sea birds and past guano mining may have on the ecosystem function in Papahānaumokuākea. It is important to understand major controls of ecosystem function for proper management of the ecosystem.

As outlined above and below, our activities have no detectable effect to diminish Monument resources, nor have any known indirect, secondary or cumulative effects on the ecosystem or resources therein. Because we are concerned our impact we have read (Selkoe et al. 2008) and our sampling will be under any possible level of impact.

c. Is there a practicable alternative to conducting the activity within the Monument? If not, explain why your activities must be conducted in the Monument.

Because our interest is to examine the impact of seabird transfer of nutrients to ecosystems within the Monument, the research must be done here. The NWHI present an unusual problem that does not occur in the main islands. These islands are small and provide little habitat for vegetation thus terrestrial nutrient sources, if they are important, will be those recycled from the sea by birds. to understand this system it is essential that the work be done in place where isotopes and bacterial sources and be tracked in situ.

d. How does the end value of the activity outweigh its adverse impacts on Monument cultural, natural and historic resources, qualities, and ecological integrity?

Given that our research requires very small samples and should have no adverse effects on the resources of the Monument, we believe that the end value of this research clearly outweighs that impact. Further, identifying whether seabirds and historical losses of them and guano mining have impacted the structure of the ecosystem is essential to future management. Determination of the sources of nutrients and their potential shifts will give us a deeper understanding of how changes in bottom up processes impact the ecosystem function within the Monument. These results could have a major impact in understanding the distribution of algae, invertebrates , and grazing fish.

e. Explain how the duration of the activity is no longer than necessary to achieve its stated purpose.

The cruise length is shorter than ideal, and is certainly no longer than is necessary to accomplish the research goals outlined in this permit application. Ideally one could sample monthly to get a time integrated signal of terrestrial inputs. However, even a single measure will provide a great deal of information on the importance of birds and provide us with enough information to know if more extensive research is warranted.

f. Provide information demonstrating that you are qualified to conduct and complete the activity and mitigate any potential impacts resulting from its conduct.

I have a PhD in Integrative Biology, and have published more than 40 research papers in peer-reviewed journals dealing specifically with the subject of nutrient dynamics and transport in systems Recently I have also worked to develop collaborations using the MST techniques in natural systems that have resulted in 2 papers. I will be responsible for the conduct of my team and the field PIs on this project will be Oscar Guayadol, who has been involved in a number of research cruises.

g. Provide information demonstrating that you have adequate financial resources available to conduct and complete the activity and mitigate any potential impacts resulting from its conduct.

There are adequate finances in the Thomas lab and the PMNM-HIMB partnership to conduct and complete all the research outlined herein. We have an established track record of completing and publishing the research.

h. Explain how your methods and procedures are appropriate to achieve the proposed activity's goals in relation to their impacts to Monument cultural, natural and historic resources, qualities, and ecological integrity.

Our choice of sites are guided by the vessel and Monument staff while aboard the NOAA vessel Hi'ialakai. We generally avoid any sites that are identified as culturally significant, and focus our activities in regions that maximize the safety of the crew while ensuring that the proposed work will be completed. All work will be conducted in shallow coastal sites. No access to land is necessary. The methods outlined herein are employed routinely in the Thomas and Toonen labs, and are appropriate to the proposed activities. We employ non-lethal sampling whenever possible and take only the samples necessary to address the questions we are seeking to answer for the resource managers who guide this work.

i. Has your vessel has been outfitted with a mobile transceiver unit approved by OLE and complies with the requirements of Presidential Proclamation 8031?

We will be using the NOAA vessel Hi'ialakai

j. Demonstrate that there are no other factors that would make the issuance of a permit for the activity inappropriate.

There are no other factors that would make the issuance of the permit inappropriate

8. Procedures/Methods:

To determine what the spatial extent to which the nutrient source influences the surrounding marine environment (i.e. what is the potential footprint of this source) we will combine isotope analysis with Microbial source tracking (MST) qPCR molecular markers to track the spatial influence of bird guano on the nearshore ecosystem. To answer if nutrients derived from bird guano contribute to supporting the nearshore marine food web in the NWHI we will utilize stable isotope analyses (including compound specific) to explore importance of different nutrient sources. For each island site (one per island chosen - choices will be made according to other needs on the ship) we will collect algal, water, and bivalve samples along two transects. These transects will run from 10 meters (or as close to shore as possible) to the reef edge. Samples will be taken at 10 meter intervals.; however the lead scientist will modify these distances as needed to minimize the number of samples collected at any site. No access to land is required. Samples (< 1 gm dry weight) of three algal species (Neomaris annulata, Turbinaria ornate, Sargassum polyphyllum) will be collected in triplicate at along the transects Samples will be dried on board and stored for analysis at the University of Hawaii on return. Future work will add trophic levels. This initial study is to set the background and determine if there are isotope signals in the base of the food web that maps on presence of MST associated with seabirds. We will also collect water samples (2 liters) these samples will be collected by hand using a 1 liter sampling bottle. Samples will be filtered and stored on board for later nutrient analysis. Microbial source tracking (MST) using real-time qPCR markers specific to seabird faucal contamination will be used to quantify the extent of fecal inputs along the transects by collecting bivalves (3 per collection). The bivalves to be collected are (Arca ventricosa and Spondylus nicobaricus). The methods will be modified from those of McQuiag et al. 2006 and Cornelisen et al in press). These methods are currently in use in the Toonen lab who will be a collaborator. Basically the bivalves are dissected and processed to remove bacteria from the gut. These bacteria are analyzed to determine their source. In particular we will use probes available for sea birds to determine if there are sea bird derived bacteria in the guts of the bivalves. Cornelisen (Cawthron Institute, New Zealand) used this technique to identify cow sources of bacteria 6 km off shore and will be collaborating on analysis.

NOTE: If land or marine archeological activities are involved, contact the Monument Permit Coordinator at the address on the general application form before proceeding, as a customized application will be needed. For more information, contact the Monument office on the first page of this application.

9a. Collection of specimens - collecting activities (would apply to any activity): organisms or objects (List of species, if applicable, attach additional sheets if necessary):

Common name:

Limu kala
Limu
Venticose ark shell
Spiny oyster

Scientific name:

1) Neomaris annulata
2) Turbinaria ornata,
3) Sargassum polyphyllum
4) Arca ventricosa
5) Spondylus nicobaricus

& size of specimens:

1, 2, 3) 30 non lethal samples at each site
4, 5) 15 samples at each site

Collection location:

Samples will be taken on an on shore off shore transect at each island where possible. transects will run from 10 meters off shore (or as close as possible) to the reef edge.

☒ Whole Organism ☒ Partial Organism

9b. What will be done with the specimens after the project has ended?

Preserved samples remain the property of the Monument, and will be made available to others requesting access to these materials through the appropriate permit process. Toonen is maintaining the database and providing for the storage of all preserved biopsy tissue samples collected to date at HIMB until they are consumed by the study or such time as the Monument co-trustees request that they be returned to them. Taxonomic voucher specimens will be submitted for permanent inclusion in the Bishop and Smithsonian museum collections as per the terms of material transfer agreement Thomas will work with Toonen to store samples as defined by the HIMB protocol.

9c. Will the organisms be kept alive after collection? ☐ Yes ☒ No

• General site/location for collections:

• Is it an open or closed system? ☐ Open ☐ Closed

• Is there an outfall? ☐ Yes ☐ No

• Will these organisms be housed with other organisms? If so, what are the other organisms?

• Will organisms be released?

10. If applicable, how will the collected samples or specimens be transported out of the Monument?

Tissue biopsy samples from bivalves guts will be frozen and transported back to HIMB aboard the R/V Hi'ialakai. Algal samples will be dried on board and stored for later analysis at the University of Hawaii. Water samples will be filtered and frozen.

11. Describe collaborative activities to share samples, reduce duplicative sampling, or duplicative research:

All HIMB researchers working on similar species have coordinated to share samples and avoid duplicate sampling The PI will work with CRED to determine if their algal collection can be used for isotope analysis. This analysis will be limited and cannot include compound specific isotope analysis because of sample age and storage.

12a. List all specialized gear and materials to be used in this activity:

We will collect algal samples by clipping fronds from intact specimens. Bivalves will be collected by hand by prying them from the substrate and water will be collected by filling a one liter bottle by hand. All samples will be taken by hand during SCUBA diving. Each collector will have standard SCUBA gear (mask, fins, snorkel, wetsuit, tank, BCD) and a collection bag in which to store gear and samples as they are collected.

12b. List all Hazardous Materials you propose to take to and use within the Monument:

None.

13. Describe any fixed installations and instrumentation proposed to be set in the Monument:

None

14. Provide a time line for sample analysis, data analysis, write-up and publication of information:

Samples will be analyzed within 6 months of collection for isotopes and MST markers.

Regardless of the time to publication, the results from these studies are made available to Monument managers as quickly as possible through the brown-bag luncheons, semi-annual reports, and semi-annual mini symposium during which all researchers involved in this project present the most current findings from their ongoing research to the broader management community. We also reach the NGO community and general public each year with presentations at the Hawaii Conservation Conference, Hanauma Bay seminar series, and other education and outreach venues. In sum, these efforts ensure that research results are provided to the Monument co-trustees almost as quickly as they become available, and made available to the greater management community within no more than 6 months of the data being collected.

15. List all Applicants' publications directly related to the proposed project:

Anderson KL, Whitlock JE and HarwoodVJ. 2005. Persistence and differential survival of fecal indicator bacteria in subtropical waters and sediments. Applied and Environmental Microbiology. 71: 3041-3048.

Badgley B.D., Thomas F.I.M. and V.J. Harwood 2010 The Effects of Submerged Aquatic Vegetation on the Persistence of Environmental Populations of Enterococcus spp. in Outdoor Mesocosms. Environmental Microbiology 12: 1271-1281.

de Oliveira A, Pinhata JMW 2008. Antimicrobial resistance and species composition of Enterococcus spp. isolated from waters and sands of marine recreational beaches in Southeastern Brazil. Water Research 42 (8-9): 2242-2250.

Ferguson DM, Moore DF, Getrich MA, Zhowandai MH 2005. Enumeration and speciation of enterococci found in marine and intertidal sediments and coastal water in southern California. Journal of Applied Microbiology 99 (3): 598-608.

McQuaig, S.M., T. M. Scott, V. J. Harwood, S. R. Farrah and J.O. Lukasik. 2006. Novel method for the detection of human derived fecal pollution in environmental waters using a PCR based human polyomavirus assay. App. Environ. Microbiol. 72: 7567-7574

Selkoe, K.A., B.H. Halpern, C. Ebert, E. Franklin, E. Selig, K. Casey, J. Bruno, R.J. Toonen. 2009. A map of cumulative impacts to a "pristine" coral reef ecosystem, the Papahānaumokuākea Marine National Monument. Coral Reefs 28(3):635-650.

Stoeckel, DM and Harwood VJ. 2007. Performance, design, and analysis in microbial

source tracking studies. Applied and Environmental Microbiology. 73:2405-2415.

With knowledge of the penalties for false or incomplete statements, as provided by 18 U.S.C. 1001, and for perjury, as provided by 18 U.S.C. 1621, I hereby certify to the best of my abilities under penalty of perjury of that the information I have provided on this application form is true and correct. I agree that the Co-Trustees may post this application in its entirety on the Internet. I understand that the Co-Trustees will consider deleting all information that I have identified as "confidential" prior to posting the application.

Signature Date

SEND ONE SIGNED APPLICATION VIA MAIL TO THE MONUMENT OFFICE BELOW:

Papahānaumokuākea Marine National Monument Permit Coordinator
6600 Kalaniana'ole Hwy. # 300
Honolulu, HI 96825
FAX: (808) 397-2662

DID YOU INCLUDE THESE?
☒ Applicant CV/Resume/Biography
☒ Intended field Principal Investigator CV/Resume/Biography
☒ Electronic and Hard Copy of Application with Signature
☒ Statement of information you wish to be kept confidential
☒ Material Safety Data Sheets for Hazardous Materials

Sample type	Sample #	Sample size	Sample sites/ island	Samples per island	Islands	Total samples	Total weight/volume for all islands	
							SI units	Common US units
Neomaris annulata	3	1 gm wet weight	9	27	6	162	162 gms	0.324 lbs
Turbinaria ornata	3	1 gm wet weight	9	27	6	162	162 gms	0.324 lbs
Sargassum polyphyllum	3	1 gm wet weight	9	27	6	162	162 gms	0.324 lbs
Arca ventricosa	2	1 individual	9	18	6	108	108 individuals	108 individuals
Spondylus nicobaricus	2	1 individual	9	18	6	108	108 individuals	108 individuals
Water	3	30 ml/ 1 fl oz	9	27	6	162	4860 mls	162 oz or 1.2 gallons

Water samples (30 mls is equal to 1 oz or 1/8 of a cup)
Solid Samples (1 gm = 0.002 lbs)

Papahānaumokuākea Marine National Monument
Compliance Information Sheet

1. Updated list of personnel to be covered by permit. List all personnel names and their roles here (e.g. John Doe, Diver; Jane Doe, Field Technician, Jerry Doe, Medical Assistant): Oscar Guadayol i Roig (Field PI, Diver)Megan Donahue (Researcher, Diver), Nyssa Silbiger (Graduate Assistant, Diver),

2. Specific Site Location(s): (Attach copies of specific collection locations): Based on current tentative cruise plans, we will collect water samples for microbial source tracking (MST) analyses at Nihoa, Necker, Midway, Laysan, and/or Gardner.

3. Other permits (list and attach documentation of all other related Federal or State permits): None

3a. For each of the permits listed, identify any permit violations or any permit that was suspended, amended, modified or revoked for cause. Explain the circumstances surrounding the violation or permit suspension, amendment, modification or revocation. None

4. Funding sources (Attach copies of your budget, specific to proposed activities under this permit and include funding sources. See instructions for more information): The costs of the project include sample analysis ($10,000). This analysis will be covered through the partnership and through start-up funds to Florence Thomas. Guadayol Roig is a postdoc with Dr. Flo Thomas funded by the NWHI-HIMB partnership. Salary for RA Silbiger, is funded by the NSF EPSCoR grant to the University of Hawaii.

5. Time frame:
Activity start: July 23, 2011
Activity completion: February 2012

Dates actively inside the Monument:
From: July 23, 2011
To: Aug 20, 2011

F-3b

Describe any limiting factors in declaring specific dates of the proposed activity at the time of application: The processing of the samples collected for MST will be conducted at the Hawaii Institute of Marine biology during the following 6 months, but specific dates as to the time will take depend on the number of samples finally obtained, which will depend on the final cruise plan and the working conditions at the moment of sampling.

Personnel schedule in the Monument: Guadayol Roig, Donahue, and Silbiger will be in the monument on the R/V Hi'ialakai, currently scheduled for July 23-Aug 20, 2011.

6. Indicate (with attached documentation) what insurance policies, bonding coverage, and/or financial resources are in place to pay for or reimburse the Monument trustees for the necessary search and rescue, evacuation, and/or removal of any or all persons covered by the permit from the Monument: All divers are requested to carry DAN insurance in addition to UH workers compensation that will cover any diving related injury or an accident that occurs while on a diving research cruise.

7. Check the appropriate box to indicate how personnel will enter the Monument:

☒ Vessel
☐ Aircraft

Provide Vessel and Aircraft information: NOAA R/V Hi'ialakai

8. The certifications/inspections (below) must be completed prior to departure for vessels (and associated tenders) entering the Monument. Fill in scheduled date (attach documentation):

☐ Rodent free, Date:
☐ Tender vessel, Date:
☐ Ballast water, Date:
☐ Gear/equipment, Date:
☐ Hull inspection, Date:

9. Vessel information (NOTE: if you are traveling aboard a National Oceanic and Atmospheric Administration vessel, skip this question):
Vessel name:
Vessel owner:
Captain's name:

IMO#:
Vessel ID#:
Flag:
Vessel type:
Call sign:
Embarkation port:
Last port vessel will have been at prior to this embarkation:
Length:
Gross tonnage:
Total ballast water capacity volume (m3):
Total number of ballast water tanks on ship:
Total fuel capacity:
Total number of fuel tanks on ship:
Marine Sanitation Device:
Type:

Explain in detail how you will comply with the regulations regarding discharge in the Monument. Describe in detail. If applicable, attach schematics of the vessel's discharge and treatment systems:

Other fuel/hazardous materials to be carried on board and amounts:

Provide proof of a National Oceanic and Atmospheric Administration (NOAA) Office of Law Enforcement-approved Vessel Monitoring System (VMS). Provide the name and contact information of the contractor responsible for installing the VMS system. Also describe VMS unit name and type:

VMS Email:
Inmarsat ID#:

* Individuals MUST ENSURE that a type-approved VMS unit is installed and that its automatic position reports are being properly received by the NOAA OLE system prior to the issuance of a permit. To make sure your VMS is properly configured for the NOAA OLE system, please contact NOAA OLE at (808) 203-2503 or (808) 203-2500.

* PERMITS WILL NOT BE ISSUED TO INDIVIDUALS ENTERING THE MONUMENT VIA VESSEL UNTIL NOAA OLE HAS CONTACTED THE MONUMENT PERMIT COORDINATOR WITH A 'POSITIVE CHECK' READING.

10. Tender information:

On what workboats (tenders) will personnel, gear and materials be transported within the Monument? List the number of tenders/skiffs aboard and specific types of motors:

Additional Information for Land Based Operations

11. Proposed movement of personnel, gear, materials, and, if applicable, samples:

12. Room and board requirements on island:

13. Work space needs:

DID YOU INCLUDE THESE?

- ☐ Map(s) or GPS point(s) of Project Location(s), if applicable
- ☐ Funding Proposal(s)
- ☐ Funding and Award Documentation, if already received
- ☐ Documentation of Insurance, if already received
- ☐ Documentation of Inspections
- ☐ Documentation of all required Federal and State Permits or applications for permits

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

GUY KAULUKUKUI
FIRST DEPUTY

WILLIAM M. TAM
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF AQUATIC RESOURCES
1151 PUNCHBOWL STREET, ROOM 330
HONOLULU, HAWAII 96813

July 8, 2011

TO: Division of Aquatic Resources File

THROUGH: William J. Aila, Jr., Chairperson

FROM: Francis Oishi
Division of Aquatic Resources

SUBJECT:

DECLARATION OF EXEMPTION FROM THE PREPARATION OF AN ENVIRONMENTAL ASSESSMENT UNDER THE AUTHORITY OF CHAPTER 343, HRS AND CHAPTER 11-200 HAR, FOR PAPAHĀNAUMOKUĀKEA MARINE NATIONAL MONUMENT RESEARCH PERMIT TO DR. FLORENCE THOMAS, UNIVERSITY OF HAWAII, HAWAII INSTITUTE OF MARINE BIOLOGY, FOR ACCESS TO STATE WATERS TO CONDUCT NUTRIENT PRODUCTIVITY RESEARCH ACTIVITIES UNDER PERMIT PMNM-2011-027.

The following permitted activities are found to be exempted from preparation of an environmental assessment under the authority of Chapter 343, HRS and Chapter 11-200, HAR:

Project Title:
Papahānaumokuākea Marine National Monument Research Permit to Dr. Florence Thomas, University of Hawaii, Hawaii Institute of Marine Biology, for Access to State Waters to Conduct Nutrient Productivity Research Activities

Permit Number: PMNM-2011-027

Project Description:
The research permit application, as described below, would allow entry and activities to occur in Papahānaumokuākea Marine National Monument (Monument), including the NWHI State waters from July 15, 2011 through November 30, 2011.

The Applicant proposes to collect samples of common reef algae, small bivalve species, and water samples by hand while either snorkeling or utilizing SCUBA in order to determine the relative role of terrestrial sources of nutrients (primarily resulting from seabirds) to primary productivity in the archipelago. More specifically, the Applicant proposes to focus on whether the loss of terrestrial input of nutrients from bird sources over time has altered productivity in the Northwest Hawaiian Islands; possibly resulting in some of the shifts in productivity seen today.

F-3c

The proposed activities are in direct support of the Monument Management Plan's priority management need 3.1 – Understanding and Interpreting the NWHI (through action plan 3.1.1 – Marine Conservation Science). This action plan calls for further understanding of "functional linkages of marine organisms and their habitats" and also notes that monitoring data can help scientists understand causes of change. Activities to support this understanding such as the nutrient productivity research to be carried out by the permittee are also addressed in the Monument Management Plan Environmental Assessment (December 2008) which resulted in a FONSI. This EA summarizes that measuring connectivity could be helpful to forecast, prepare for and mediate potential threats to populations within the Monument (PMNM MMP Vol. 2, p.171). Measurements of nutrient cycling productivity and connections between terrestrial and marine natural systems, such as those proposed, would enhance this understanding.

Consulted Parties:
The permit application was sent out for review and comment to the following scientific and cultural entities: Hawaii Division of Aquatic Resources, Hawaii Division of Forestry and Wildlife, Papahānaumokuākea Marine National Monument (NOAA/NOS), NOAA Pacific Islands Regional Office (NOAA-PIRO), United States Fish and Wildlife Service Hawaiian and Pacific Islands National Wildlife Refuge Complex Office, and the Office of Hawaiian Affairs (OHA). In addition, the permit application has been posted on the Monument Web site since April 7th, giving the public an opportunity to comment. The application was posted within 40 days of its receipt, in accordance with the Monument's Public Notification Policy.

Exemption Determination:
After reviewing HAR § 11-200-(8), including the criteria used to determine significance under HAR § 11-200-12, DLNR has concluded that the activities under this permit would have minimal or no significant effect on the environment and that issuance of the permit is categorically exempt from the requirement to prepare an environmental assessment based on the following analysis:

1. All activities associated with this permit, including the collection of algae, bivalve, and water samples, have been evaluated as a single action. As a preliminary matter, multiple or phased actions, such as when a group of actions are part of a larger undertaking, or when an individual project is precedent to or represents a commitment to a larger project, must be grouped together and evaluated as a single action. HAR § 11-200-7. This permit does not involve an activity that is precedent to a later planned activity.

2. The Exemption Class for Scientific Research with no Serious or Major Environmental Disturbance Appears to Apply. Chapter 343, HRS, and § 11-200-8, HAR, provide for a list of classes of actions exempt from environmental assessment requirements. HAR §11-200-8.A.5. exempts the class of actions which involve "basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource." This exemption class has been interpreted to include "surveys, censuses, inventories, studies, photographing, recording, sampling, collection, culture and captive propagation of aquatic biota", such as those being proposed.

The proposed collection activities here appear to fall squarely under the exemption class #5, exempt item #5 as described under the former Fish and Game Division exemption list published in January 19, 1976. As discussed below, no significant disturbance to any environmental

resource is anticipated in the sampling of Monument resources. Thus, so long as the below considerations are met, an exemption class should include the action now contemplated.

3. Cumulative Impacts of Actions in the Same Place and Impacts with Respect to the Potentially Particularly Sensitive Environment Will Not be Significant. Even where a categorical exemption appears to include a proposed action, the action cannot be declared exempt if "the cumulative impact of planned successive actions in the same place, over time, is significant, or when an action that is normally insignificant in its impact on the environment may be significant in a particularly sensitive environment." HAR § 11-200-8.B. To gauge whether a significant impact or effect is probable, an exempting agency must consider every phase of a proposed action, any expected primary and secondary consequences, the long-term and short-term effects of the action, the overall and cumulative effect of the action, and the sum effects of an action on the quality of the environment. HAR § 11-200-12. Examples of actions which commonly have a significant effect on the environment are listed under HAR § 11-200-12.

The project involves collection of common algae, bivalves, and water samples by hand. While the intent and goals of this project are unique, past projects have included similar collections and techniques with no adverse impact. Widely accepted baseline monitoring of marine resources within the Monument has utilized hand collections at a larger scale than what this Applicant is proposing with no adverse impacts. With this in mind, no significant impacts are anticipated as a result of the proposed collection techniques. All activities will be conducted in a manner compatible with the management direction of the Monument Proclamation in that the activities do not diminish monument resources, qualities, and ecological integrity, or have any indirect, secondary, cultural, or cumulative effects. The joint permit review process did not reveal any anticipated indirect or cumulative impacts, nor did it raise any cultural concerns, that would occur as a result of these activities.

The activities would be conducted from the NOAA Ship HI'IALAKAI (PMNM-2011-009) during its July/August cruise. The following table lists additional activities that are anticipated to take place on this cruise pending approval of permit applications.

Table 1. Concurrent Projects Aboard NOAA SHIP HI'IALAKAI

Permit	Purpose and Scope	Location
PMNM-2011-009 NOAA Ship HI'IALAKAI	The permit allows NOAA Ship HI'IALAKAI entry into PMNM. Personnel aboard the vessel will be permitted under separate permits.	All locations
PMNM-2011-018 Meyer (proposed)	The proposed action is to allow collection of reef fish and tagging of top predators as well as acoustic receiver deployment	All locations
PMNM-2011-020 Aeby (proposed)	The proposed action is to allow collection of reef fish and corals for disease studies as well as monitoring for diseased corals	All locations

Permit	Purpose and Scope	Location
PMNM-2011-021 Winn (proposed)	The proposed action is to allow water sampling.	All locations
PMNM-2011-023 Au (proposed)	The proposed action is to allow deployment and retrieval of acoustic receivers.	Kure, Lisianski, FFS, Nihoa
PMNM-2011-025 Bowen (proposed)	The proposed action is to allow collection of reef fishes and invertebrates.	All locations
PMNM-2011-022 Godwin (proposed)	The proposed action is to allow quantitative surveys and collections of coral, algae, fish, and non-coral invertebrates.	All locations
PMNM-2011-032 Donahue (proposed)	The proposed action is to allow collection of corals, deploy coral settlement blocks, and measure water chemistry.	All locations

This is the only nutrient productivity study proposed that highlights the connection between the terrestrial and marine systems. Three additional proposed activities include collections of algal, bivalve, and/or water species, Winn's (PMNM-2011-021), Bowen's (PMNM-2011-025), and Godwin's (PMNM-2011-022) proposed collections. Winn's water samples as proposed will be taken from depths greater than 60 meters and therefore will not overlap with that proposed by this Applicant, whose would max out at 60 meter depths. Bowen's invertebrate species collection list does not include bivalves and as such does not overlap with the two bivalves this Applicant is proposing to collect. Lastly, Godwin's proposed collections are for taxonomic identification purposes; since the bivalves and algae requested by this Applicant are common species, they will not overlap with those collected by Godwin.

The culmination of these permits, and their disparate activities, occurring throughout the Monument over a 4-week period, is not anticipated to have significant cumulative impacts. The NOAA Ship OSCAR ELTON SETTE (PMNM-2011-008) may also be in the Monument during this time frame facilitating needs of the monk seal camps under the management permit (PMNM-2011-001).

Since no significant cumulative impacts or significant impacts with respect to any particularly sensitive aspect of the project area are anticipated, the categorical exemptions identified above should remain applicable.

4. Overall Impacts will Probably be Minimal and Insignificant.

Again, any foreseeable impacts from the proposed activity will probably be minimal, and further mitigated by general and specific conditions attached to the permit. Specifically, all research activities covered by this permit will be carried out with strict safeguards for the natural, historic,

and cultural resources of the Monument as required by Presidential Proclamation 8031, other applicable law and agency policies and standard operating procedures.

Conclusion. Upon consideration of the permit to be approved by the Board of Land and Natural Resources, the potential effects of the above listed project as provided by Chapter 343, HRS and Chapter 11-200 HAR, have been determined to be of probable minimal or no significant effect on the environment and exempt from the preparation of an environmental assessment.

William J. Aila, Jr.
Chairperson, Board of Land and Natural Resources

Date